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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,884	01/20/2004	Eric R. Schott	EQLC-P01-005	4233
28120	7590	10/20/2006	EXAMINER	
FISH & NEAVE IP GROUP ROPES & GRAY LLP ONE INTERNATIONAL PLACE BOSTON, MA 02110-2624			DOAN, DUC T	
			ART UNIT	PAPER NUMBER
			2188	

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/761,884	SCHOTT, ERIC R.	
	Examiner	Art Unit	
	Duc T. Doan	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-14, 18-20 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-14, 18-20 and 22-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 1-21 have been presented for examination in this application. In response to the last office action, the specification has been amended, claims 1-4, 11-14, 19-20 have been amended, claims 5-7, 15-17, 21 have been canceled, claims 22-31 have been added. As the result, claims 1-4, 8-14, 18-20, 22-31 are now pending in this application.

Claims 1-4, 8-14, 18-20, 22-31 are rejected.

All rejections and objections not explicitly repeated below are withdrawn.

Applicant's arguments filed 9/6/06 have been fully considered but they are mooted in view of new ground(s) of rejection necessitated by the Applicant's amendments to the claims.

Information Disclosure Statement

The Information Disclosure Statement(s) received 9/6/06 5/22/06 4/5/06 3/16/06 7/27/05 7/19/04 have been considered. Please see attached PTO-1449(s).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4,8-14,18-20,22-31 rejected under 35 U.S.C. 103(a) as being unpatentable over Umberger et al (US 6957433), in view of Hinshaw et al (US 2004/012842), and further in view of Hartman et al (The Zebra Striped Network File System) .

As in claim 1, Umberger describes a system for providing differentiated classes of storage (different RAID levels in a RAID storage system; I/O data transfer operation in place Umberger's column 13 lines 27-35), comprising a storage device having a plurality of storage locations and a logical block name space for organizing the storage locations (Umberger's column 8 line 62 to column 9 line 3 discloses storage locations are organized into logical block name space using logical block names),

a performance process for determining a level of performance for the plurality of storage locations and partitioning the plurality of storage locations into a plurality of regions as determined by their different levels of performance. Umberger's column 8 lines 62-67 discloses a performance process that determines the performance of storage locations, the performance is based on the speed of accessing storage locations, and/or based on the redundancy amount implemented for storage locations. Umberger does not expressly disclose performance associating with regions of storage location. However, Hinshaw's paragraph 4 discloses a performance method in which storage locations are partitioned into segments "regions"; each region has a different level of performance (tracks on inner side of disk, shorter, accessed faster). It would have been obvious to one of ordinary skill in the art at the time of invention to partition/assign storage locations in regions based on the different levels of performances

associated with storage locations in these regions, thereby increasing the access speed and improve the throughput of the overall system (see Hinshaw's paragraph 4, placing the mirror's segments on shorter tracks, thereby improving the general speed of the system),

and a mapping process for mapping the partitioned regions of storage locations and aggregating the logical block names of the storage location in the partitioned regions having identical level of performance to the selected section of the logical block name space. Umberger discloses a process in which storage locations distributed in stripes "regions" are being tracked (Umberger's column 11 lines 40-43), being mapped to logical block names of client/workloads' requests (Umberger's column 8 line 67 to column 3 line 9). Umberger and Hinshaw do not expressly disclose the "aggregating the logical block names" aspect of the claim. However, Hartman's section 2.3, second and third paragraphs, discloses a storage system capable of mapping and tracking data blocks of multiple files being requested per client (blocks of different files are "aggregated" batched together, being stripped across servers/disks' regions (Hartman's Fig 4). It would have been obvious to one of ordinary skill in the art at the time of invention to include per client tripping method as suggested by Hartman in Umberger's system to map requests by stripping data blocks of files, by processing requests in parallel and aggregate manner thereby further improving the overall system throughput for requests associated with small files.

As in claim 2, the claim recites the performance process separates the plurality of storage locations into a plurality of categories as determined by their different levels of performance (Umberger's column 12 lines 32-44 discloses a performance process that stores data into a storage system with separate RAID's categories based on their different levels of performance).

As in claim 3, the claim recites the performance process separates the plurality of storage locations into a plurality of categories being associated with a different RAID level of performance. The claim rejected based on the same rationale as in the rejection of claim 2.

As in claim 4, the claim recites wherein the aggregated logical block names correspond to a common RAID level. The claim rejected based on the same rationale as in the rejection of claim 1. Hartman's Fig 4 clearly shows the aggregated of logical block names of files's data blocks into RAID stripes.

As in claim 8, the claim recites a process for employing the storage to provide a file system service. Hartman's page 29, section 1, paragraph 4 discloses a process in which the storage system provides a file system service such as stripping data blocks of files across storage servers.

As in claims 9-10, the claim recites a process for providing a storage volume service (claim 9; Umberger's column 11 lines 34-45 discloses a process to provide service such as data being stripped across disk's storage volumes); the mapping process creates multiple storage volumes at a selected level of performance (claim 10; Umberger's column 11 lines 34-45 discloses data blocks are mapped into multiple disk's storage volumes of RAID's storage system, wherein RAID 1 has higher performance than RAID 5).

Claims 11,19 rejected based on the same rationale as in the rejection of claim 1.

Claim 12 rejected based on the same rationale as in the rejection of claim 2.

Claim 13 rejected based on the same rationale as in the rejection of claim 3.

Claim 14 rejected based on the same rationale as in the rejection of claim 4.

Claim 18 rejected based on the same rationale as in the rejection of claim 10.

As in claim 20, the claim recites wherein the partitioning process selected a fixed set of partitions as a function of a selected configuration of system components (Umberger's column 12 lines 30-45 discloses a process to select disks and assigning them to fix set of partitions for RAID configurations).

As in claim 22, Umberger's column 8 lines 62-67 discloses wherein a level of performance includes a data access time, or a reliability of a storage location, or a combination thereof.

As in claim 23, the claim recites wherein the storage device is a single storage disk. The claim rejected based on the same rationale as in claim 1. Hinshaw's paragraph 5 clearly discloses a disk can be partitions into different segments for a RAID configuration.

As in claims 24-25, the claim recites wherein the mapping process performs mapping and aggregating when the storage system is designed (claim 24; Umberger's column 12 lines 35-45 discloses disks are assigned to RAID configurations as it is designed) wherein the mapping process performs mapping and aggregating during operation of the storage device (claim 25; Umberger's column 12 lines 45-66 further discloses during operations, the requests data can be mapped dynamically into different RAID configurations).

As in claim 26, the claim recites a performance measurement system for scanning storage locations of the storage device and determine the level of performance for the storage locations. The claim is rejected based on the same rationale as of claim 1. Hinshaw's paragraph 4 further discloses the performance is determined by measure/scanning the read/write data access speed on the rotating disk, because while the disk is spinning, the inner tracks, shorter tracks, will have faster access time.

As in claim 27, the claim recites wherein the performance measurement system performs experimental read and write operations and determines the level of performance from experimental data collected in the read and write operations. The claim rejected based on the same rationale as in claim 26. Hinshaw clearly teaches the performance measurement must be based on measuring the speed of the read/write operations on tracks of rotating disk.

Claim 28 rejected based on the same rationale as of claim 22.

Claim 29 rejected based on the same rationale as of claim 27.

Claims 30-31 rejected based on the same rationale as of claims 23-24 respectively.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 36 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

When responding to the office action, Applicant is advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mano Padmanabhan
7/2/06

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER